PREDICTING SMOKING STATUS BY SYMPTOMS OF DEPRESSION FOR U.S. ADOLESCENTS

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Abstract:

Summary.—This study examined the predictive relationships between adolescents' smoking and symptoms of depression. A national sample of 6,900 adolescents, ages 14 to 18 years, were selected for analysis. Variables of interest included measures for smoking status and symptoms of depression. Odds ratio and adjusted odds ratio from logistic regression analyses indicated that more of the 885 smokers than of the 6,015 nonsmokers reported feelings of unhappiness, sadness, or depression, hopelessness about the future, and having trouble going to sleep.

Article:

Despite exposure to smoking prevention programs and the knowledge of adverse effects of cigarettes, many adolescents continue to smoke regularly (Cleary, Hitchcock, Semmer, Flinchbaugh, & Pinney, 1988). Cigarettes are still the number one drug used by adolescents (Flay, 1985) and each day over 3,000 teenagers in the U.S. begin smoking cigarettes (Leventhal & Cleary, 1980). Information about why adolescents smoke is important in increasing the efficacy of current interventions for smoking prevention and cessation. Researchers have reported an association between nicotine dependence and major depression for young adults (U.S. Department of Health and Human Services, 1984; Breslau, Kilbey, & Andreski, 1991). However, no study has examined the association between symptoms of depression and the smoking status of adolescents within a national representative sample. This study investigated the predictive relationships between smoking status and the symptoms of depression among adolescents in the USA.

METHOD

The 1989 Teenage Attitudes and Practices Survey was conducted by the National Center for Health Statistics (Moss, Allen, Giovino, & Mills, 1992). A nationwide random sample of 9,965 adolescents, ages 12 to 18 years, completed the telephone interview. Initial analysis indicated that the smoking prevalence for adolescents 12 and 13 years old was small (<2%). So, only adolescents ages 14 to 18 years *(N* = 6 ,900 , boys = 3,514, girls = 3,386) were included in the subsequent analysis.

The information obtained from this survey included measures of smoking status and a series of factors related to symptoms of depression among others. The symptoms of depression were probed with questions asking whether during the past year respondents felt unhappy or depressed, felt hopeless about the future, felt nervous or tense, worried too much, or had trouble going to sleep.

Crude and adjusted odds ratios (ORs) and 95% confidence intervals (CIs) were calculated. The dependent variable of smoking was dichotomized by current regular smoker versus never smoked *(n* = 6 ,015) . This paper defines regular smokers *(n* = 885) as those who were currently smoking, had smoked 10 or more days in the past 30 days, and had smoked at least 100 cigarettes in their lifetimes.

RESULTS

Table 1 shows the univariate distributions of smoking prevalence by levels of symptoms of depression predictors. The statistics for the crude odds ratios indicate that all six symptoms of predictors of depression

were significant. Adolescents who reported "often" to each symptom of the depression predictors were associated with a greater risk of being smokers than those who reported "rare/never,"

TABLE 1
ODDS RATIOS AND ADJUSTED ODDS RATIOS OF SMOKING STATUS BY SYMPTOMS OF DEPRESSION

Variable	Crude Odds Ratio	Adjusted Odds Ratio[a]	95% Confidence Interval[b]
Felt unhappy, sad, or depressed			
Often (898, 21.9%)[c]	2.4	1.5	(1.3, 1.7)
Sometimes (2210, 12.4%)	1.3	0.9	(0.8, 1.2)
Rare/Never (3230, 9.8%)	1.0	1.0	
Felt hopeless about the future			
Often (492, 25.4%)	2.9	1.5	(1.3, 1.8)
Sometimes (985, 15.1%)	1.5	0.9	(0.8, 1.1)
Rare/Never (4859, 10.5%)	1.0	1.0	
Trouble going to sleep or staying asleep			
Often (941, 19.4%)	1.9	1.3	(1.2, 1.5)
Sometimes (1592, 11.3%)	1.0	0.9	(0.9, 1.0)
Rare/Never (3812, 11.1%)	1.0	1.0	
Felt too tired to do things			
Often (965, 16.1%)	1.5	1.1	(0.9, 1.2)
Sometimes (2179, 12.0%)	1.0	1.0	(0.9, 1.2)
Rare/Never (2831, 11.6%)	1.0	1.0	
Felt nervous or tense			
Often (1216, 18.5%)	2.0	1.2	(1.1, 1.4)
Sometimes (2509, 11.6%)	1.1	0.9	(0.8, 1.0)
Rare/Never (2618, 10.3%)	1.0	1.0	
Worried too much about things			
Often (1733, 15.8%)	1.4	0.9	(0.8, 1.0)
Sometimes (2170, 10.4%)	0.9	0.9	(0.8, 1.0)
Rare/Never (2441, 11.8%)	1.0	1.0	

[a]Adjusted for all other predictors of symptoms of depression and age, sex, and ethnicity.
[b]Confidence interval for adjusted odds ratio.
[c]The numbers in the parentheses are the sample size and the percentages are the smoking prevalence rate. Totals may not add to 6,900 because values are missing.

After simultaneously controlling for all predictors, including demographic variables, i.e., age, sex, and ethnicity, in the multivariate logistic model, three symptoms of depression predictors remained significant, feelings of "unhappiness, sadness or depression," "hopelessness about the future," and "trouble going to sleep or staying asleep." The over-all accuracy of prediction for smokers and nonsmokers by all predictors was 87.14%.

DISCUSSION

The findings showed that adolescent smokers were more likely than nonsmokers to show associated symptoms of depression such as feeling unhappy or depressed and feeling hopeless about the future. While the biological processes involved in smoking and symptoms of depression remain to be identified (Pomerleau & Pomerleau, 1984; Carmody, 1989), the literature seems to suggest that the process may be reciprocal. For example, nicotine is known to affect both the central acetylcholine and catecholamine systems (Pomerleau & Pomerleau, 1984) which may play a role in the depressive state. In addition, smoking may influence an individual's mood state through the central nervous system (Gilberg & Spielberger, 1987; Carmody, 1989). On the other hand, a model proposed by Eysenck (1980) postulated that emotional stress is a major internal motivational factor that stimulates smoking. Empirical findings also indicate that major depression tends to increase the likelihood of nicotine dependence for young adults (Breslau, *et al.,* 1991). While establishing a causal relationship between smoking behavior and symptoms of depression among adolescents may require longitudinal or experimental studies, this cross-sectional analysis identified significant differences on symptoms of depression between smoking and nonsmoking adolescents.

Since no prior studies have examined the relationship of symptoms of depression and the smoking status of adolescents in the USA, these results provide some useful insights for smoking interventions and support the need to incorporate mental and emotional health education strategies into smoking prevention programs targeting nonsmoking adolescents, while, for adolescent smokers, intervention programs should include strategies that provide young smokers with behavioral skills to deal with symptoms of depression such as coping skills, relaxation techniques, and altered attitudes. Consequently, the likelihood that such interventions would positively affect their smoking behavior as adults might be enhanced.

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